FW

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/981,794	10/19/2001	Satoshi Kondo	2001-1528A	6966

513 7590 09/22/2005

WENDEROTH, LIND & PONACK, L.L.P.
2033 K STREET N. W.
SUITE 800
WASHINGTON, DC 20006-1021

EXAMINER	
NATNAEL, PAULOS M	
ART UNIT	**PAPER NUMBER**
2614	

DATE MAILED: 09/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/981,794	KONDO ET AL.	
	Examiner	Art Unit	
	Paulos M. Natnael	2614	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 July 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 3-39* is/are pending in the application.

4a) Of the above claim(s) *2* is/are withdrawn from consideration.

5)☒ Claim(s) *10-37* is/are allowed.

6)☒ Claim(s) *1,3-6,9,38 and 39* is/are rejected.

7)☒ Claim(s) *7 and 8* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims **1,3-6,38** are rejected under 35 U.S.C. 102(e) as being anticipated by Clatanoff et al. U.S. Patent No. **5,519,451**.

Considering claim **1**, a deinterlacing method for converting an interlaced image into a progressive image, comprising steps of:

a) performing a filtering process to pixels of at least one of three fields, is met by median filter **45**, fig.2;

b) Considering the claimed "a deinterlacing target field to be subjected to a deinterlacing process and forward and backward fields of the deinterlacing target field within the interlaced image, thereby generating an interpolation pixel for the deinterlacing target field, Clatanoff et al. discloses a motion adaptive scan rate conversion using directional

edge interpolation. And "a method for processing video data to produce a progressively scanned signal from an input of conventional interlaced video" (see Abstract of the disclosure). Clatanoff et al. teaches that, "The interpolated pixel X is determined using the motion signal k, in conjunction with the spatial neighbor pixels of X, as well as pixel Z from the previous field, in Fig. 3b." (col. 3, 23-25) Furthermore, as shown in Fig.2 interpolated output Y=KA +(1-k)B is generated in order to produce or generate a progressively scanned signal from an input of conventional interlaced video signal.

c) measuring a quantity of motion of the deinterlacing target field, is met by SVP 2 which generates the motion signal K at 28, fig.2;

d) changing a filter coefficient of a filter used in the filtering on the basis of the quantity of the motion, is met by SVP 1 fig.2, which uses the motion signal the coefficient K to calculate the interpolated output at 36, Fig.2.

Considering claim **3**, the deinterlacing method of Claim 1 wherein in the step of generating the interpolation pixel, pixels in the deinterlacing target field or peripheral fields, which are in the same horizontal position as that of a position to be interpolated are subjected to the filtering process.

Regarding claim 3, see rejection of claim 1(a) and (b). (see also the discussion of fig.3b)

Considering claim **4,** the deinterlacing method of Claim 1 wherein in the step of measuring the quantity of the motion, the quantity of the motion is obtained from a difference between the deinterlacing target field or a frame including the deinterlacing target field, and other field or frame, is met by the difference calculated from the delayed field signal generated by delay 22 and the input signal Y, and output to the ABS 42 in SVP2, fig.2;

Considering claim **5,** see rejection of claim 4;

Considering claim **6**, see rejection of claim 4;

Regarding claim **38**, the claimed filter which is used for the filtering process in the step of generating the interpolation pixel has characteristics of extracting vertical low frequency components of the deinterlacing target field, and extracting vertical high frequency components of the forward and backward fields of the deinterlacing target field, is met by spatial filters 29, comprising VLPF and HLPF, which are utilized to extract or pass low-frequency component and high-frequency component of the signal, respectively.

3. Claims **9** and **39** are rejected under 35 U.S.C. 102(e) as being anticipated by Heimburger U.S. Patent No. **5,995,154**.

Considering claim **9**, Heimburger discloses a process for interpolating progressive frame. Heimburger teaches a process for converting interlaced frames into progressive frames comprising a change of frame frequency by interpolation and motion compensation, wherein when a motion vector associated with a pixel to be interpolated is non-zero or when the motion vector is zero but the confidence accorded to this vector is less than a given threshold, the interpolation of the pixel of a frame situated temporally between two input frames is carried out by a median filtering pertaining to the values obtained by a first motion compensated linear temporal filter, a second motion compensated linear filter, and a motion compensated median temporal filter. (abstract of the disclosure) On fig.2, Heimburger teaches an input interlace signal input to a motion estimator 5 and the noise reduction system 2. The filters filter the input signal according to the video signal based on the coefficient "b" generated by the motion estimation 5. Heimburger discloses that "the two linear filters carry out temporal interpolation with weighting coefficients corresponding to the relative positions of the pixel to be interpolated with respect to the pixels a, b, c. It should be noted that these are two pure temporal filters, that is to say they use just a single pixel in each of the input frames. This makes it possible to avoid loss of vertical resolution. The median filter also makes it possible to preserve good spatial resolution in the frame generated. However, it also makes it possible to retain some homogeneity between the various interpolation mechanisms for the three frames." (col. 25, lines 17-28) Thus, claim 9 as claimed is met by the disclosure of Heimburger as shown above.

As to claim **39**, see rejection of claim 9 above.

Response to Arguments

4. Applicant's arguments regarding claim 1, filed 7/7/05 have been fully considered but they are not persuasive. The applicant argues that Therefore, Clatanoff et al. clearly does not disclose or suggest generating an interpolation pixel for the target field by performing a filtering process to pixels of at least one of three fields, and changing the filter coefficient of a filter used in the filtering process based on the measured quantity of motion of the target field, as recited in claims 1 and 9. However, as shown above, the examiner submits that Clatanoff et al. discloses a motion adaptive scan rate conversion using directional edge interpolation in order to produce a progressively scanned signal from an input of conventional interlaced video. The reference of Clatanoff et al. also teaches that, "The interpolated pixel X is determined using the motion signal k, in conjunction with the spatial neighbor pixels of X, as well as pixel Z from the previous field, in Fig. 3b." (col. 3, 23-25) Furthermore, as shown in Fig.2 interpolated output Y=KA +(1-k)B is generated in order to produce or generate a progressively scanned signal from an input of conventional interlaced video signal. Thus, Clatanoff discloses the claimed subject matter and the argument is unpersuasive.

Allowable Subject Matter

5. Claims **10-37** remain allowable over the prior art.

6. Claims **7 and 8** objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paulos M. Natnael whose telephone number is (571) 272-7354. The examiner can normally be reached on 10:00am - 6:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Miller can be reached on (571)272-7353. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Paulos M. Natnael
Primary Examiner
Art Unit 2614

Pmn
September 14, 2005